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RESEARCH ARTICLE

First data on long-legged flies (Diptera, Dolichopodidae) of the Onezhskoye Pomorye National Park (Arkhangelsk Region, Russia)

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Abstract

The fauna of Dolichopodidae in the Arkhangelsk Region was studied sporadically and currently includes 50 species. Onezhskoye Pomorye National Park (Arkhangelsk Region, Russia) was established in 2013 to protect the pristine forests and coastal ecosystems of the hardly accessible territories along the White Sea coast of the Onega Peninsula. The insect fauna of the National Park was almost unknown until recently, with only 17 Diptera species from the Culicidae and Chironomidae families listed in the online cadaster. During the short expedition to Onezhskoye Pomorye National Park in July–August 2020, more than 350 Dolichopodidae specimens were collected with yellow pan traps and sweep netting on routes that mainly passed through coastal habitats. Nineteen species of Dolichopodidae have been reported for the first time from this territory. Thirteen species are reported for the first time from the Arkhangelsk region, bringing the total number of known species to 63. The species list is given and supplied with brief comments on habitat and distribution. Photos of some typical habitats are provided. Most of the discovered species are widespread throughout the Palaearctic Region. Rarer species include *Dolichopus diadema*, which probably represents a southern Palaearctic element, and *Hydrophorus norvegicus*, which was previously known only from Fennoscandia.

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Keywords
Dolichopodids, ecology, distribution, fauna, new record, Palaearctic region

Introduction

The Onezhskoye Pomorye National Park (201,668 ha) is located on the Onega Peninsula surrounded by the Onega and Dvina bays of the White Sea. It was created on the sea coast of the peninsula in 2013 to protect pristine forests and coastal ecosystems. This territory belongs to the Scandinavian and Russian (North European) Taiga ecoregion within the Taiga biome (Olson et al. 2001) and is covered mainly with swamped boreal forests. Several ecosystems are present here, including old-growth coniferous forests, extensive marsh areas, lake and river systems, coastal littoral and sandy dune complexes. The wild nature is preserved in this area in a more or less primeval state due to the lack of roads and impassable mires in the center of the peninsula.

The fauna of Dolichopodidae in the Arkhangelsk Region was studied rather sporadically and currently includes 50 species (Ovsyannikova and Grichanov 2020). Regarding the territory of the Onezhskoye Pomorye National Park, only 17 Diptera species from the Culicidae and Chironomidae families were registered here until recently. We provide the first data on long-legged flies in this remarkable area.

Methods

All specimens for this study were collected by the first author during his short expedition (28 July to 5 August 2020) to the Onezhskoye Pomorye National Park; his name and the name of the collecting region are omitted from the list. Information on the global distribution for each species follows Grichanov (2017). Collecting was carried out in the Onezhskii and Primorskii districts of the Arkhangelsk Region at nine points, northward and southward of the village Pushlakhta (Table 1; Fig. 1). Traditional sweep nets were used on the routes passing usually through coastal habitats. Yellow pan traps were exposed at the Malaya Palova locality for 2 days. The material was mounted on pins to be deposited at the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Table 1. Collecting localities within the Onezhskoye Pomorye National Park

Locality	District	Latitude:Longitude	Comments
Palova	Onezhskii	64.5642°N:36.8896°E	Small river
Malaya Palova	Onezhskii	64.5890°N:36.8506°E	Small river
Kamennyi Ruchei	Onezhskii	64.6106°N:36.8220°E	Small river

Locality	District	Latitude:Longitude	Comments
Chesmenskii	Primorskii	64.7180°N:36.5468°E	Light house
Shidrovka	Primorskii	64.7908°N:36.5309°E	Small river
Podtailochnye Ozyora	Primorskii	64.8569°N:36.4807°E	Lake system northward of Pushlakhta
Cape Savin	Primorskii	64.8886°N:36.4646°E	Small cape northward of Pushlakhta
Orlovskii	Primorskii	64.9248°N:36.4473°E	Abandoned village
Konyukhovo	Primorskii	64.8874°N:36.5735°E	Abandoned village

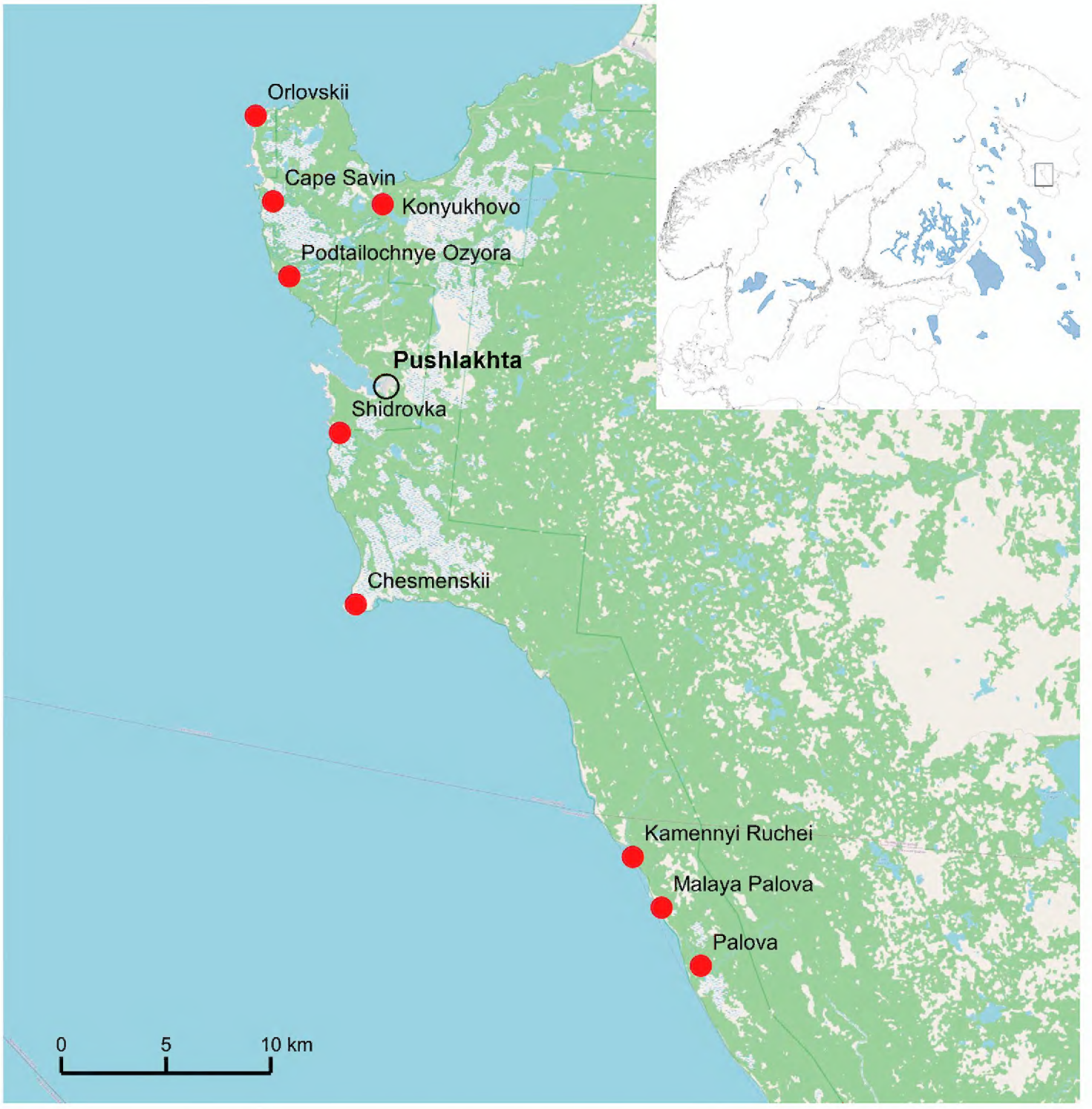

Figure 1. Points of collection of dolichopodids in the Onezhskoye Pomorye National Park.

Results

In total, 374 specimens of Dolichopodidae were collected and 19 species (presented in the following list) were identified (see also the Suppl. material 1: Dolichopodidae of the Onezhskoye Pomorye National Park). All species are reported for the first time from the Onezhskoye Pomorye National Park, and 13 species are new for the Arkhangelsk Region (marked with *).

Dolichopus claviger* Stannius, 1831

Material. 2♂♂, Chesmenskii, 31.07.2020.

Comments. Collected among the vegetation of coastal marshes (Fig. 2). Trans-Palaearctic species (except for arid regions).

Dolichopus clavipes* Haliday, 1832

Material. 1♂, 1♀, Kamennyi Ruchei, 29.07.2020; 1♀, Malaya Palova, 30.07.2020.

Comments. Trans-Palaearctic species (except for arid regions).

Dolichopus diadema* Haliday, 1832

Material. 1♂, Chesmenskii, 31.07.2020; 2♂♂, Cape Savin, 03.08.2020.

Comments. The species is a southern Palearctic element with the nearest findings in Finland, Estonia, Krasnodar Territory, and Rostov Region of Russia.

Figure 2. Coastal marsh with *Blysmus rufus* (Huds.) Link, *Bolboschoenus maritimus* (L.) Palla, *Carex mackenziei* V. Krecz., *Juncus gerardii* Loisel., and *Eleocharis uniglumis* (Link) Schult. The habitat of *Dolichopus claviger* and *Hydrophorus praecox*.

Dolichopus discifer Stannius, 1831

Material. 1♂, 2♀♀, Palova, 30.07.2020; 5♂♂, 4♀♀, Shidrovka, 01.08.2020; 3♂♂, 4♀♀, Chesmenskii, 31.07.2020; 12♂♂, 36♀♀, Malaya Palova, 28–29.07.2020; 5♂♂, 3♀♀, Podtailochnye Ozyora, 02.08.2020; 1♂, 2♀♀, Cape Savin, 03.08.2020; 3♂♂, 14♀♀, Kamennyi Ruchei, 29.07.2020; 3♂♂, 2♀♀, Orlovskii, 04.08.2020; 2♂♂, 1♀, Konyukhovo, 05.08.2020.

Comments. One of the commonest species in the study area collected in various habitats. Trans-Holarctic species.

Dolichopus latipennis Fallén, 1823*

Material. 4♀♀, Malaya Palova, 28.07.2020; 1♂, Kamennyi Ruchei, 29.07.2020; 1♂, 1♀, Podtailochnye Ozyora, 02.08.2020; 1♂, Cape Savin, 03.08.2020.

Comments. Typical inhabitants of the intertidal zone (Figs 3, 4). Holarctic temperate species.

Dolichopus nitidus Fallén, 1823*

Material. 1♂, Kamennyi Ruchei, 29.07.2020.

Comments. Trans-Palaearctic species (except for arid regions); reported also from Oriental China (Henan, Shanghai).

Figure 3. Overgrowth of *Carex subspathacea* Wormsk. ex Hornem, *Agrostis straminea* Hartm., and *Festuca richardsonii* Hook in the intertidal zone. The habitat of *Dolichopus latipennis*, *Hydrophorus borealis*, *H. norvegicus*, *Syntormon pallipes*.

Figure 4. Fresh water seepages on *Equisetum arvense* L. along the sea shore. The habitat of *Dolichopus latipennis*, *Hydrophorus borealis*, *H. norvegicus*, *Syntormon pallipes*.

Dolichopus nubilus Meigen, 1824*

Material. 3♂♂, Podtailochnye Ozyora, 02.08.2020; 18♂♂, Cape Savin, 03.08.2020; 2♂♂, Chesmenskii, 31.07.2020.

Comments. Trans-Palaearctic species (except for arctic and subarctic regions).

Dolichopus plumipes (Scopoli, 1736)

Material. 1♂, Chesmenskii, 31.07.2020; 2♂♂, Kamennyi Ruchei, 29.07.2020; 2♂♂, Orlovskii, 04.08.2020; 7♂♂, Podtailochnye Ozyora, 02.08.2020; 11♂♂, Cape Savin, 03.08.2020; 1♂, 2♀♀, Palova, 30.07.2020.

Comments. Mainly Holarctic species; Neotropical: Mexico; Oriental: China, India (Kashmir).

Dolichopus popularis Wiedemann, 1817*

Material. 1♂, Chesmenskii, 31.07.2020.

Comments. Palaearctic species (except for arid, arctic and subarctic regions) distributed from West Europe eastward to Altai Republic and Krasnoyarsk Territory.

Dolichopus simplex Meigen, 1824*

Material. 6♂♂, Cape Savin, 03.08.2020; 4♂♂, 2♀♀, Kamennyi Ruchei, 29.07.2020; 2♂♂, Podtailochnye Ozyora, 02.08.2020.

Comments. Inhabits whole Europe, the Caucasus, Iran, Kazakhstan and Turkey.

Dolichopus trivialis Haliday, 1832*

Material. 1♂, Malaya Palova, 28–29.07.2020; 1♂, Shidrovka, 01.08.2020; 2♂♂, Chesmenskii, 31.07.2020.

Comments. Common inhabitants of herb-rich meadows (Fig. 5). Trans-Palaearctic species (except for arid, arctic and subarctic regions).

Dolichopus ungulatus (Linnaeus, 1758)

Material. 1♂, Malaya Palova, 28–29.07.2020.

Comments. Occurring together with the previous species. Trans-Palaearctic species (except for arid regions).

Hydrophorus albiceps Frey, 1915*

Material. 1♂, Podtailochnye Ozyora, 02.08.2020; 2♂♂, 1♀, Shidrovka, 01.08.2020; 6♂♂, 4♀♀, Palova, 30.07.2020.

Comments. Often encountered running over *Nuphar lutea* leaves near the shores of small lakes (Fig. 6). Reported from Austria, Belgium, Denmark, Finland, France, Ireland, Mongolia, Netherlands, Norway, Russia (Kamchatka, Krasnoyarsk Territory, Leningrad and Murmansk Regions, NW Siberia), Sweden, and UK.

Figure 5. Herb-rich meadow near an abandoned fisherman's house. Habitat of *Dolichopus trivialis* and *D. ungulatus*.

Figure 6. Small lake with vegetation of *Nuphar lutea* (L.) Sm. along the shore. The habitat of *Hydrophorus albiceps* and *H. altivagus*.

Hydrophorus altivagus Aldrich, 1911*

Material. 1♂, Chesmenskii, 31.07.2020; 1♂, Shidrovka, 01.08.2020; 1♂, Palova, 30.07.2020.

Comments. Occurring together with the previous species. Holarctic temperate.

Hydrophorus borealis Loew, 1857

Material. 19♂♂, 13♀♀, Malaya Palova, 28.07.2020; 1♀, Orlovskii, 04.08.2020; 1♀, Podtailochnye Ozyora, 02.08.2020; 1♀, Palova, 30.07.2020.

Comments. Common species occured among vegetation in the intertidal zone (Figs 3, 4). Reported from Austria, Czech Republic, Denmark, Finland, France, Norway, Russia (Arkhangelsk, Leningrad, Murmansk and Sverdlovsk Regions, Buryatia, Kamchatka, Karelia), Sweden, and Switzerland.

Hydrophorus norvegicus Ringdahl, 1928*

Material. 3♂♂, 5♀♀, Kamennyi Ruchei, 29.07.2020; 6♂♂, 6♀♀, Orlovskii, 04.08.2020; 30♂♂, 26♀♀, Malaya Palova, 28.07.2020; 1♀, Shidrovka, 01.08.2020; 4♂♂, 5♀♀, Cape Savin, 03.08.2020; 7♂♂, Podtailochnye Ozyora, 02.08.2020; 2♂♂, Chesmenskii, 31.07.2020.

Comments. The most abundant species occurred among vegetation in the intertidal zone (Figs. 3, 4). Reported from Finland, Norway, Russia (Murmansk Region) and Sweden.

Hydrophorus praecox* (Lehmann, 1822)

Material. 5♂♂, Chesmenskii, 31.07.2020; 1♀, Malaya Palova, 28.07.2020.

Comments. Collected along small pools in coastal marshes (Fig. 2). Almost cosmopolitan species.

***Syntormon pallipes* (Fabricius, 1794)**

Material. 2♂♂, 7♀♀, Malaya Palova, 28.07.2020; 2♂♂, 9♀♀, Kamennyi Ruchei, 29.07.2020; 3♂♂, 2♀♀, Podtailochnye Ozyora, 02.08.2020; 1♂, Chesmenskii, 31.07.2020; 3♂♂, 3♀♀, Orlovskii, 04.08.2020.

Comments. Typical inhabitants of the intertidal zone (Figs. 3, 4). Two phenotypes of the species occur in the Palaearctic (except for the arctic and subarctic regions and Siberia), Oriental (China) and Afrotropical (Tanzania, Yemen) regions. The material examined belongs to the true *pallipes* phenotype.

***Sympycnus pulicarius* (Fallén, 1823)**

Material. 1♂, Palova, 30.07.2020.

Comments. Trans-Palaearctic species distributed from west Europe eastward to Mongolia and Yakutia; Nearctic: USA (California).

Conclusion

Most collected species are widespread throughout the Palaearctic Region, being common in well-studied regions of North-West Russia. Some rare dolichopodid species collected in the Onezhskoye Pomorye National Park are worth noting. *Dolichopus diadema* is apparently a southern Palaearctic element with the main distribution in Eurasian regions with mild climate; nevertheless, it was also recorded from southern Fennoscandia. *Hydrophorus norvegicus* is known only from Fennoscandia; however, it is very close to *Hydrophorus rufibarbis* Gerstaecker, 1864, with somewhat wider area (from the United Kingdom in the west to Arkhangelsk Region in the east). We think that the old records of the latter species must be confirmed, as they may belong to *H. norvegicus*.

As a result of this study, new material from Dolichopodidae was collected and identified. The present research features new records for 19 species, including 13 species new for the Arkhangelsk Region. In total, 63 species are recorded here that apparently make up 40–50% of the actual dolichopodid fauna in this region.

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References

Grichanov IYa (2017) Alphabetic list of generic and specific names of predatory flies of the epifamily Dolichopodoidae (Diptera). 2nd Edition. VIZR, St. Petersburg: 1–563. https://doi.org/10.5281/zenodo.884863

Olson DM, Dinerstein E, Wikramanayake ED, Burgess ND, Powell GVN, Underwood EC, D'amico JA, Itoua I, Strand HE, Morrison JC, Loucks CJ, Allnutt TF, Ricketts TH, Kura Y, Lamoreux JF, Wettengel WW, Hedao P, Kassem KR (2001) Terrestrial Ecoregions of the World: A New Map of Life on Earth: A new global map of terrestrial ecoregions provides an innovative tool for conserving biodiversity. BioScience 51(11): 933–938. https://doi.org/10.1641/0006-3568(2001)051[0933:TEOTWA]2.0.CO;2

Ovsyannikova EI, Grichanov IYa (2020) Review of recent investigations of Dolichopodidae (Diptera) fauna of Russian North-West. In: Ovchinnikova OG, Shamshev IV (Eds) XI All-Russian Dipterological Symposium (with international participation), Voronezh, 24–29 August 2020: Materials. Russian Entomological Society, St.-Petersburg, 302–305. https://doi.org/10.47640/978-5-00105-586-0_2020_302

Supplementary material 1

Dolichopodidae of the Onezhskoye Pomorye National Park

Authors: Alexei Polevoi, Igor Grichanov

Data type: Occurrences

Explanation note: The dataset, containing all records of Dolchopodidae form the Onezhskoye Pomorye National Park.

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